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EDITORIAL

LEUCORRHOEA

One of the most troublesome forms of leucorrhoea is that caused by an infestation of the vagina by the parasite known as the *Trichomonas vaginalis*. This vaginitis deserves special attention as it produces more mental and physical suffering than is generally realized. Patients are apt to think that it has a venereal character. Owing to loss of efficiency it is also of considerable economic importance. Whether infection occurs during sexual intercourse is a very debatable point.

According to Liston cases occur in which a man is said to have contracted gonorrhoea from his wife when in reality he has been infected from her with the flagellate *T. vaginalis*. A tendency to relapse after treatment in certain cases of trichomonas vaginitis in married women may possibly be explained on the ground of re-infection through their husbands. Drummond, for example, examined five husbands of nine treatment resistant cases and in four of these obtained prostatic fluid which contained trichomonads. He states that in only one of the four cases was trichomonads found in stained films made from the secretion in the urinary meatus, but after prostatic massage four cases were found to be positive. The infection of males with this parasite is very rare, and in Liston and Drummond's limited experience of such cases the trichomonads were most easily demonstrated in the secretion beneath the prepuce.

Swift, during his investigation, encountered no case of urethritis in the male, although the wives were infected. He examined the prostatic fluid, but failed to find the trichomonads. He therefore came to the conclusion that the trichomonads did not flourish in the male urethra.

Riba quotes two cases of urethritis in the male due to the trichomonas and also found that the parasites were present in nine cases in the prostatic fluid out of 3,000 men.

Allen, Jensen and Wood state that they recovered trichomonads from the prostatic fluid of six husbands whose wives were infected.

Cornell, Goodman and Matthies also quote a case of *Trichomonas urethritis* in a male which occurred after connexion with an infected woman.

Buxton and Shelanski examined the prostatic secretion of 102 males and in four cases, or 3.9 per cent, *Trichomonas vaginalis* was found. It appears therefore that further investigation is needed before the true source of the infection can be definitely stated.

According to Hess, whilst considering the problems of protozoal infestations it is necessary to distinguish between the early and the more advanced condition. The determining factor in such a classification is the integrity or otherwise of the wall of this bodily cavity in which the infestation has lodged. It is a very debatable point whether the trichomonads *per se* have the power to penetrate the vaginal wall. It is possible that it needs an ally in the form of a streptococcus or other organism to produce the necessary conditions.

Again it is possible that a nutritional or unhygienic state of the patient may have much to do with the frequent relapses which occur in this type of infestation. Working on these lines, it appears that two groups of cases can be recognized. Patients who are in a relatively good state as regards nutrition both locally and

systemically, in so far as there is still an adequate carbohydrate reserve. The trichomonads may remain as comparatively innocuous saprophytes, giving little or no trouble. In patients where the organism has remained in considerable numbers in the vagina for a prolonged period a lowering of the glycogen level, and a contamination of the vaginal flora is found, followed by an alteration of the pH. Conditions are then produced which favour penetration of the vaginal wall by the protozoon.

Trichomonad infestation of the vagina causes a persistent upset of the chemical balance, unless normal conditions are restored rapidly, and thus a constant drainage of the powers of resistance of the vagina is established.

Menge expressed the view that the protozoal causes involved in these processes of decomposition undergo no change during the course of their activity; they are and remain saprophytic. The whole process according to this author is due to the action of saprophytic organisms outside the vaginal wall and is not an infection of the tissues. Nevertheless, Hess points out that ultimately the conditions are produced in which a true "infection" by *Trichomonas vaginalis* occurs so long as we understand that by infection is meant "The penetration into the body of an autonomous, reproductive vegetable or animal excitant of disease, the life history of which in the human body is productive of local or general disturbance of such a nature, that an infective state supervenes." Since there are various gaps in the life cycle of the trichomonad, which are as yet unknown, this question at the moment cannot be settled definitely.

In the majority of cases of leucorrhoea, no matter what its origin is, an increase in the bacterial flora of the vagina inevitably occurs, followed by a consequent biological decrease in the activity of Döderlein's bacillus.

Of the organisms found in the normal healthy vagina, Döderlein's bacillus alone is capable of producing the lactic acid which is required by the vaginal tissues as a protection against infection. Moreover, Döderlein's bacillus is very sensitive to any raising or lowering of the vaginal pH, and of all the organisms found in the vagina it is the first to be affected adversely. When this occurs the auto-cleansing of the vagina by the lactic acid is inhibited and mass invasion by micro-organisms facilitated. As a result the vaginal pH becomes more and more alkaline. Eventually conditions admirably suited to the trichomonas are obtained, and its saprophytic activities become pathological and then a pronounced condition of disease in the vagina may be produced, the brunt of which is borne by the vaginal wall.

There is no doubt that the trichomonas are the biological superiors to Döderlein's bacilli and the majority of other bacilli in which they come into contact. This superiority is shown by adaptation to changes in environment, a tendency to form retrogressive strains under altered conditions and a resistance to remedial influences. Nevertheless, whilst the carbohydrate stores are high, they all live together in apparent harmony. In order to emerge from the initial stage of a saprophyte and exhibit its facultative pathogenicity, the trichomonas requires only a breakdown of the human defensive mechanism. This it either furnishes itself by the initial upset of the local carbohydrate metabolism, or there may be intercurrent damage, for example that caused by a simple chill. On the other hand again, it may encounter from the commencement a low concentration of lactic acid due to the presence in the vagina of an enfeebled type of Döderlein's bacillus. In the latter case, circumstances have already paved the way to the predatory encroachments on the reserve nutritional stores of the host and for the transition of the protozoon to a pathological state. Therefore, when considering this infestation, distinction must be made from the purely saprophytic vegetative existence in an unaffected vagina and the pathological type of human infestation which gives rise to a progressively severe vaginitis. Spontaneous disappearance of symptoms may occur in a particularly robust human host and there also appears to be no doubt that a difference in the pathogenicity may occur in the trichomonas itself, depending upon the degree of integrity of the vaginal wall.